

CLAIMS

1. A resonator comprising a substrate and a conductor layer defined on the substrate,

wherein the conductor layer is provided with first and second conductor openings communicating with each other via a first slit, and third and fourth conductor openings communicating with each other via a second slit, and the first slit and the second slit intersect each other.

2. The resonator according to Claim 1, further comprising a capacitance-forming conductor layer that is brought into proximity to the conductor layer with an insulating layer therebetween in a thickness direction of the insulating layer, wherein the capacitance-forming conductor layer is placed at a position facing four sections of the conductor layer that is sectioned by the intersecting first and second slits.

3. The resonator according to Claim 1 or 2, wherein a magnetic field or an electric field of two resonant modes in which a magnetic field vector enters or exits the first through fourth conductor openings is unbalanced to resolve the degeneracy of the two resonant modes.

4. The resonator according to any one of Claims 1 through

3, wherein at least one of the first through fourth conductor openings comprises a resonant element including one or a plurality of ring-shaped resonance units, each resonance unit being defined by one or a plurality of conductor lines and having a capacitive area and an inductive area, wherein an end of the conductor line is brought into adjacency with the other end of the conductor line or an end of another conductor line included in the same resonance unit in a width direction or a thickness direction to form the capacitive area.

5. A filter comprising the resonator according to any one of Claims 1 through 4, and signal input/output means coupled to the resonator.

6. A nonreciprocal circuit device comprising the resonator according to any one of Claims 1 through 4, and a magnet that applies a direct-current magnetic field to a ferrite member, the ferrite member being defined in a region surrounded by the first through fourth conductor openings.

7. The nonreciprocal circuit device according to Claim 6, wherein the first slit and the second slit intersect at substantially a right angle.

8. A communication apparatus comprising at least one of the resonator according to any one of Claims 1 through 4, the filter according to Claim 5, and the nonreciprocal circuit device according to Claim 6 or 7.